component analysis is performed for each of the tile images and optimum principal component vectors and images that hold and represent the image information in an optimum way are determined for each tile image and this enables the image data compression ratio to be increased without damaging the image quality, thereby contributing to a higher efficiency in the handling of image data.

As a further advantage, the principal component vectors in the multispectral image can be freed of those portions in which the noise component is predominant and this enables suppression of the noise component.

WHAT IS CLAIMED IS:

~~1. A method of compressing a multispectral image composed~~ of a plurality of spectral images of ~~an~~ object captured in a wavelength range divided ~~into~~ a plurality of bands, comprising the steps ~~of~~:

segmenting said multispectral image into a plurality of tile images;

performing principal component analysis on respective tile images to obtain for each tile image a principal component ~~number of sets of~~ principal component vectors and principal component images for the ~~multi~~spectral image;

determining from said plurality of sets, for each tile image, an optimum principal component number of sets of optimum principal component vectors and corresponding optimum principal component images that optimally represent image information about the multispectral image; and

expressing compressed image data for said multispectral image by means of at least said optimum principal component number of sets of optimum principal component images and optimum principal component vectors for each tile image.

2. The method according to claim 1, wherein the compressed image data for said multispectral image are expressed not only by said optimum principal component number of sets of said optimum principal component images and said optimum principal component vectors but also by tile image information having information about tile numbers of said tile images, a tile position and an image size of said tile images.

3. The method according to claim 1, wherein said optimum principal component number is determined based on colorimetric values in a color space.

4. The method according to claim 1, wherein said optimum principal component number is a minimum principal component number at which an absolute value of difference between image information about a composite image that is composed of selected number of sets of said principal component vectors and said principal component images and the image information about an original image that is composed based on said multispectral image is below a specified value or an absolute value of variation in error from said original image which is presented when said composite image is determined by sequentially including in an order of contribution those principal component vectors which make greater contribution to said multispectral image does not exceed a predetermined value.

5. The method according to claim 1, wherein an image size of said tile images in terms of pixel is expressed as a power notation of 2 in both a longitudinal and a transverse direction.

6. The method according to claim 1, wherein said tile images all have an image size in terms of pixel.

7. An apparatus for compressing a multispectral image composed of a plurality of spectral images of an object captured in a wavelength range divided into a plurality of bands, comprising:

an image segmenting section for segmenting said multispectral image into a plurality of tile images;

a principal component analyzing section in which respective tile images obtained in the image segmenting section are subjected to principal component analysis to obtain for each tile image a principal component number of sets of principal component vectors and principal component images for the multispectral image; and

an optimum principal component vector/image extracting section which determines an optimum principal component number of sets of optimum principal component vectors and optimum principal component images that optimally represent image information about the multispectral image from said principal component number of sets of principal component vectors and principal component images as obtained in the principal component analyzing section; and

wherein image data for said multispectral image is compressed by expressing by means of at least the optimum

principal component vectors and the image data for the optimum principal images for each tile image as obtained in said optimum component vector/image extracting section.